BIOL 1610 Biology 1

Course Description

Principles of cell biology, energetics, and genetics; animal and plant structure, function, and development. Two lectures. BIOL 1615, Biology I Laboratory, should be taken concurrently with BIOL 1610. To receive University Studies Breadth Life Sciences (BLS) credit, students must complete BIOL 1610 and BIOL 1615, and BIOL 1620 and BIOL 1625, or BIOL 3300. The BIOL 1610/BIOL 1615 and BIOL 3300 option for BLS credit is available only to students majoring in Biological Engineering or Environmental Engineering.

Semester Offered: Fall

Course Objectives

The broad goals for this course are to help you:

- Develop an understanding of how life works within the framework of core biological processes and concepts
- Begin to think like a biologist and understand how biologists construct new knowledge using evidence gained through the scientific method of observation, experimentation and hypothesis testing
- Develop learning strategies for success in college and beyond

This class is organized into five conceptual units.

Core Concepts in Biology

1) **Structure and function are linked.** The structure of molecules, cells, tissues and organisms determine how they function. Example: the types of atoms that form a molecule and the types of bonds between the atoms affect the function of the molecule. Nucleic acids and proteins are important molecules with different structures and functions in living things. What you will learn in this class: how differences in the organization of atoms in nucleic acids and proteins affect their molecular structure and allow these molecules to be used either for information storage or to do work in cells.

2) **Organisms grow, change, and maintain themselves by processes that transform and transfer energy.** All organisms must obtain energy from their external environment and transform it in a variety of ways to build and maintain themselves. Example: the energy that is stored in a molecule of ATP (chemical energy) can be transferred to a protein, Na⁺/K⁺ ATPase. This transfer of energy alters the shape of the protein (mechanical energy) and drives the movement of ions (sodium ions (Na⁺) and potassium ions (K⁺)) against their concentration gradients. This ion gradient is used to maintain osmotic balance in cells. What you will learn in this class: How stored energy in many forms (e.g. chemical bonds and ion gradients) is used to build macromolecules and maintain organisms.

3) **Information is transformed as it is transmitted.** Organisms require proper information flow within cells and between cells to grow and maintain themselves. Example: the information about how to form a particular protein is held in the sequence of nucleotides in a DNA molecule. This information is transformed from DNA to RNA and then to an amino acid sequence in order to synthesize a protein. What you will learn in this class: how genetic information and chemical signals are transmitted within and between cells.
4) **Evolution:** The diversity of life evolved by processes of mutation, selection, and genetic change. All living things are related by common ancestry and change over time in organisms has produced modern, modified species from ancestral species. The heritable traits of a species change through time by the process of evolution. What you will learn in this class: a) how shared structures and processes found in all cells provide evidence that all living things are related by common ancestry and b) how mutations caused by errors in DNA repair lead to genetic variation among individuals.

5) **Living systems are interconnected and interacting.** Cells are the fundamental units of life. In contrast to non-living things, cells are self-organizing. Cellular self-organization entails a change in cell behavior in response to signals provided by other cells. All multicellular organisms begin life as single cells that have no resemblance to the forms they develop into. The process of development involves organized systems of connections and interactions between cells. What you will learn in this class: how cells use genetic information and chemical signals through common processes of interaction to organize themselves and allow organisms to grow and develop.

**Instructor**

Shana Geffeney, PhD.

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Office Hours: Friday 10 AM-12 noon, please contact me by email to make an appointment for another time

**Course Resources**


You will have Auto-Access to an e-Book version of the textbook and the Achieve learning system through the course CANVAS site. You can purchase a copy of the textbook if you wish but it is not required.

**Course Requirements**

Each student will:

1. Complete the readings and Pre-Class Assignments as well as watch the recorded lectures before class meetings. Complete the LearningCurve Assignments.
2. Participate in group discussions for and complete five (5) in-class peer learning assignments (In-Class Answers).
3. Complete at least five of the six quizzes for the course. The lowest score will be dropped if all six (6) assignments are completed.
4. Complete the final exam.

**Evaluation Methods and Criteria**

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Points</th>
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<tbody>
<tr>
<td>Pre-class Assignments (16 X 5pts.)</td>
<td>80</td>
</tr>
<tr>
<td>LearningCurve Assignments (17 X 5 pts)</td>
<td>85</td>
</tr>
<tr>
<td>In-class Answers (5 X 10pts.)</td>
<td>50</td>
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Extra Credit:

1. There are five (5) Academic Success Assignments. These assignments teach you study skills and each one takes at least an hour to complete. You can earn two (2) extra credit points for each Academic Success Assignment you complete for a total of ten (10) possible extra credit points.

2. If 75% of the class complete their IDEA evaluations of this course then everyone will receive five (5) extra credit.

Grade Scheme

The following grading standards will be used in this class:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>100 % to 93.0%</td>
</tr>
<tr>
<td>A-</td>
<td>92.0 % to 90.0%</td>
</tr>
<tr>
<td>B+</td>
<td>89.0 % to 87.0%</td>
</tr>
<tr>
<td>B</td>
<td>86.0 % to 83.0%</td>
</tr>
<tr>
<td>B-</td>
<td>82.0 % to 80.0%</td>
</tr>
<tr>
<td>C+</td>
<td>79.0 % to 77.0%</td>
</tr>
<tr>
<td>C</td>
<td>76.0 % to 73.0%</td>
</tr>
<tr>
<td>C-</td>
<td>73.0 % to 70.0%</td>
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<tr>
<td>D+</td>
<td>69.0 % to 67.0%</td>
</tr>
<tr>
<td>D</td>
<td>66.0 % to 60.0%</td>
</tr>
<tr>
<td>F</td>
<td>59.0 % to 0.0%</td>
</tr>
</tbody>
</table>

Nonattendance Policy

Students May Be Dropped For Nonattendance

If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. (This does not remove responsibility from the student to drop courses which he or she does not plan to attend.) This option
is typically used for classes that are full and the instructor is trying to make a seat available for another student, but may be considered for other courses. Requests must be made during the first 20 percent of the course and will be considered on an individual student basis. Students who are dropped from courses will be notified by the Registrar's Office through their preferred e-mail account (see 2018-2019 General Catalog (http://catalog.usu.edu/content.php?catoid=12&navoid=3955)).

Library Services

All USU students attending classes in Logan, at our Regional Campuses, or online can access all databases, e-journals, and e-books regardless of location. Additionally, the library will mail printed books to students, at no charge to them. Students can also borrow books from any Utah academic library. Take advantage of all library services and learn more at libguides.usu.edu/rc. (http://libguides.usu.edu/rc)

Classroom Civility

Utah State University supports the principle of freedom of expression for both faculty and students. The University respects the rights of faculty to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede the learning process. Disruptive classroom behavior will not be tolerated. An individual engaging in such behavior may be subject to disciplinary action. Read Student Code Article V Section V-3 (https://studentconduct.usu.edu/studentcode/article5) for more information.

University Policies & Procedures

COVID-19 Classroom Protocols

In order to continue to provide a high standard of instruction at USU, and to limit the spread of COVID-19 during the pandemic, students are asked to follow certain classroom protocols during the fall 2020 semester. These protocols are in place not only for your safety but also the safety of the rest of the campus community. You will be asked to clean your desk area at the start of each class, sit in designated seats, wear face coverings, and follow dismission instructions. There may be individual medical circumstances that prevent some students from using face coverings. These circumstances will be rare, but if they do exist, we ask that everyone be respectful. It is imperative that we each do our part so that on-campus instruction can continue.

Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 (http://www.usu.edu/hr/files/uploads/Policies/403.pdf) further defines academic freedom and professional responsibilities.

Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:
Espouses academic integrity as an underlying and essential principle of the Utah State University community;
Understands that each act of academic dishonesty devalues every degree that is awarded by this institution;
and
Is a welcomed and valued member of Utah State University.

Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University’s Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating**: using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
  - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done “individually;”
  - Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
  - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
  - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
  - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
  - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.
- **Falsification**: altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism**: representing, by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

For additional information go to: ARTICLE VI. University Regulations Regarding Academic Integrity (https://studentconduct.usu.edu/studentcode/article6)

Sexual Harassment/Title IX

Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and USU Policy 339 (http://www.usu.edu/policies/339) address sexual harassment in the workplace and academic setting.

The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact USU’s Office of Equity (https://equity.usu.edu/) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment (USU Policy 305 (http://www.usu.edu/policies/305/)), and has designated the Office of Equity Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.

Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term ‘extenuating’ circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the
Students with Disabilities

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) (http://www.usu.edu/drc/) as early in the semester as possible (University Inn # 101, (435) 797-2444, drc@usu.edu (mailto:drc@usu.edu)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

Students who are at a higher risk for complications from COVID-19 or who contract COVID-19 may also be eligible for accommodations.

Diversity Statement

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Division of Student Affairs: https://studentaffairs.usu.edu (https://studentaffairs.usu.edu/), (435) 797-1712, studentservices@usu.edu (mailto:studentservices@usu.edu), TSC 220
- Student Legal Services: https://ususa.usu.edu/student-association/student-advocacy/legal-services (https://ususa.usu.edu/student-association/student-advocacy/legal-services), (435) 797-2912, TSC 326,
- Access and Diversity: http://accesscenter.usu.edu (http://accesscenter.usu.edu/), (435) 797-1728, access@usu.edu (mailto:access@usu.edu); TSC 315
- Multicultural Programs: http://accesscenter.usu.edu/multiculture (http://accesscenter.usu.edu/multiculture), (435) 797-1728, TSC 315
- LGBTQA Programs: http://accesscenter.usu.edu/lgbtqa (http://accesscenter.usu.edu/lgbtqa/), (435) 797-1728, TSC 3145
- Provost's Office Diversity Resources: https://www.usu.edu/provost/diversity (https://www.usu.edu/provost/diversity/), (435) 797-8176

You can learn about your student rights by visiting:

The Code of Policies and Procedures for Students at Utah State University: https://studentconduct.usu.edu/studentcode (https://studentconduct.usu.edu/studentcode/)

Grievance Process

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: Article VII (https://studentconduct.usu.edu/studentcode/article7).

Full details for USU Academic Policies and Procedures can be found at:

- Student Conduct (http://www.usu.edu/studentconduct)
- Student Code (https://studentconduct.usu.edu/studentcode/)
- Academic Integrity (https://studentconduct.usu.edu/studentcode/article6)
- USU Selected Academic Policies and Procedures (http://www.usu.edu/provost/faculty-life/syllabus.cfm)

Emergency Procedures
In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.

**Mental Health**

Mental health is critically important for the success of USU students. As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. Utah State University provides free services for students to assist them with addressing these and other concerns. You can learn more about the broad range of confidential mental health services available on campus at Counseling and Psychological Services (CAPS) (https://counseling.usu.edu).

Students are also encouraged to download the “SafeUT App” (https://healthcare.utah.edu/uni/programs/safe-ut-smartphone-app) to their smartphones. The SafeUT application is a 24/7 statewide crisis text and tip service that provides real-time crisis intervention to students through texting and a confidential tip program that can help anyone with emotional crises, bullying, relationship problems, mental health, or suicide related issues.